4798

RENEWAL OF PERMITS TO OPERATE-NINE STORAGE TANKS-AT THE FEMP (OEPA) NO. 1431110128 T062, T063, T064, T065, T066, T068, T069, T070, T071

09/21/93

C:RP:93-0161 FERMCO/OEPA 65 PERMIT AP



reinald Environmental

Restoration Management Corporation P.O. Box 3987O4 Cincinnati, Ohio 45239-87O4 (513) 738-62OO

September 21, 1993

U. S. Department of Energy Fernald Environmental Management Project Letter No. C:RP:93-0161

Mr. Peter Sturdevant
Compliance Specialist
Hamilton County Department
of Environmental Services
Air Quality Management Division
1632 Central Parkway
Cincinnati, Ohio 45210

Dear Mr. Sturdevant:

RENEWAL OF PERMITS TO OPERATE - NINE STORAGE TANKS - AT THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT (OEPA) NO. 1431110128 T062, T063, T064, T065, T066, T068, T069, T070, T071

Enclosed please find the renewal applications for the nine storage tanks at the FEMP. The Permits to Operate will expire on December 13, 1993 for three of the tanks, and on December 20, 1993 for the remaining six tanks. A check for \$135.00 is enclosed to cover the application fee.

Please contact Mr. Bob Roulston of my staff at 738-6907 if you have any questions about this application.

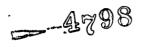
Sincerely,

ArKenneth L. Alkema

Vice President

Regulatory Programs

KLA:RKR:mhv Attachments





Mr. Peter Sturdevant Letter No. C:RP:93-0161 Page 2

cc:

R. W. Bischoff, FERMCO, w/o attachments S. M. Beckman, FERMCO, w/o attachments Robert Mendelsohn, DOE Contract Specialist

W. J. Quaider, DOE-FN

R. K. Roulston, FERMCO, w/o attachments P. B. Spotts, FERMCO, w/o attachments

AR Coordinator / PR Files (PTO T062, T063, T064, T065, T066, T068, T069, T070, T071)

File Record Storage Copy 108.6

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RENEWAL APPLICATION FOR PTO TO62

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OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

	Fernald E ity Name	nvironmental	Management Project	Mr. Stephen Person to C	
	<u>Willey Road</u> ity Address			Post Office Mailing Add	
<u>Ferna</u> City	1d Har	nilton County	<u>45030</u> Zip	<u>Cincinnati</u> City	OH 45239-8705 State Zip
Telep	hone	513/ 738 Area	8-6502 Number	Telephone	513/ 738-6502
(Appl	ication no.	#1431110; , if this is	128-T062 a renewal app	olication)	4953 Std. Ind. Class. Code
1.	Complete a the air con is to be aAppendixAppendixAppendixAppendixAppendixAppendixAppendixAppendixAppendixAppendixAppendix	nd attach an attached when tached when K A, Process K B, Fuel-Bunk C, Incinera C, Surface Printing K E, Storage K H, Gasoline Gasoline Terminal K K, Surface	y of the follorce. In adding applicable. rning Equipment or Coating or Operation Tank Dispensing Rack at Bulk Plant or	lowing appendice tion, a complia Check as appro Appendix Append Appendix Appendix Appendix Appendix Appendix Appendix Appendix	es most appropriate to ince time schedule form priate the following: L, Solvent Metal Cleaning ix M, Fugitive Dust Emission Sources Specify Appendix No. N, Rubber Tire Manufacturing O, Dry Cleaning Facility P, Landfills pendix ce Time Schedule
2.	Description	of Source (same as used	on appendix):_T	Tank 17C
3.	Your identi	fication for	Source (same	e as used on app	pendix): <u>02-093</u>
	Administrat contaminant additional all attachm 1) Appendix	tive Code, last source(s) documents are ments):	hereby apply described he re submitted a	for a Permiterein. As recast part of this Authorized Street L. Authoriz	35-02(B) of the Ohio to Operate the air quired, the following application (describe Signature Alkema ent Regulatory Programs
			•	Title 9/17/93	3
\$				Date	

0.004

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 $\,$ EPA-3161 $\,$

FOR OFFICIAL USE ONLY
Premise No///
Source No/
Application No/

		A.(J
	00E -	FEMP		
	(Fac	cility	Nam	e)
OEPA	NO 14	311101	.28	T062
	FEMP	ID NO.	02	-093

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1.	Tank identification: Name or number 17C (FEMP 2-093) Date Installed 1952 (month/year)
2.	Tank capacity: 2,250 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify
4.	[] Spherical [] Other, specify
5. 6.	Tank shell material: [] Steel [] Aluminum [X] Other, specifyStainless Steel Type of tank: [] External floating roof tank
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
8. 9.	Type of filling: [X] Splash [] Submerged [] Other, specify If this tank is located outdoors and above ground, provide the paint color of the tank. N/A Tank is not painted - Stainless Steel [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify Condition of paint: [] Good [] Poor
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item. N/A
	a) Type of vapor control system Manufacturer Make or model Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled: (Attach calculations and test data to support response, unless previously submitted)

DOE - F	EMP
(Facilit	y Name)
<u> 17C </u>	(FEMP 2-093
	tification)

Pressure Vacuum If p Type of Vent Valve Setting Setting vapor co	ressure relief is discharged to ntrol, identify the vapor contr
Operational Data (complete (a) through (g) of this item stored. Attach additional sheets if necessary.)	for all materials stored or to
a) Material <u>Dirty Solvent (see note)</u> Trade N Density: <u>7.3</u> lbs/gal or <u> </u>	ame <u>N/A</u> N/A
b) Temperature of stored material: Average <u>AMB</u> of and (If temperature is approximately outdoor ambient temp	Maximum <u>AMB</u> ° F erature, write "AMB".)
c) Vapor pressure of stored material (Complete i, ii, ii pressure is not known, write "unknown"):	i of this item. If vapor
i.) Actual vapor pressure: <u>unknown</u> psia at <u>unknown</u> ps	average storage temperature ia at maximum storage temperatu
ii.) Reid vapor pressure: Average psi and mini	mum-maximum psi
iii.) If material stored is a gas or liquified gas, pro is stored: psi gage at °F	ovide the pressure at which it
d) Type of liquid organic material (If the material is a gasoline, fuel oil, kerosene, crude oil, lubricant or othe question below.)	n organic liquid <u>other</u> than a er petroleum liquid, answer
Is it a photochemically reactive material? [X] Yes	[] No
e) Type of waste material (If the material is a waste, a	nswer the question below.)
Is it a hazardous waste? [] yes [] No If yes, identify type (EPA hazardous waste number)	
f) Indicate the year (or 12-month period) for item (g): g) Annual throughput of material: 18,750	1983 gallons.
pleted by <u>Robert K. Roulston, Jr.</u>	Date Aug. 30, 1993

Storage Tank Emission Report Tuesday, September 14 1993

```
--- Tank Characteristics ----
Identification
                           17C/2-093
   Identification No.:
                           Dayton
   City:
                           Ohio
   State:
                           DOE-FEMP
   Company:
Input Parameters
                           Vertical Fixed Roof
   Type of Tank:
Tank Dimensions
   Shell Height (ft):
                                    8
   Diameter (ft):
                                     6
   Liquid Height (ft):
                                  2250
   Volume (gallons):
   Turnovers:
                                18750
   Net Throughput (gal/yr):
Roof Characteristics
   Roof Type:
                            Cone
   Roof Height (ft):
                            0.000
   Slope (ft/ft):
                          0.00000
                             0.00
   Dome Radius (ft):
Paint Characteristics
   Shell Color/Shade:
                           Aluminum/Specular
                           Good
   Shell Condition:
                           Aluminum/Specular
   Roof Color/Shade:
   Roof Condition:
                           Good
Breather Vent Settings
   Vacuum Setting(psig):
                            0.00
   Pressure Setting(psig):
                            0.00
--- Storage Tank Contents Temperature Data ----
Daily Average Ambient Temperature (Degrees Farenheit) =
                                                                  51.90
Daily Minimum Ambient Temperature (Degrees Farenheit) =
                                                                  42.30
                                                                  61.50
Daily Maximum Ambient Temperature (Degrees Farenheit) =
                                                                  19.20
Daily Ambient Temperature Range =
                                                                1160.00
Solar Insolation Factor =
Alpha (Shell) =
                                                                   0.39
                                                                   0.39
Alpha (Roof) =
                                                                  53.24
Liquid Bulk Temperature (Degrees Farenheit) =
Average Liquid Surface Temperature (Degrees Farenheit) =
                                                                  56.22
Daily Maximum Liquid Surface Temperature (Degrees Farenheit) =
                                                                  62.84
                                                                  49.60
Daily Minimum Liquid Surface Temperature (Degrees Farenheit) =
                                                                  26.49
Daily Vapor Temperature Range =
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4798

--- Storage Tank Vapor Pressure Information ---Tuesday, September 14 1993
Storage Tank Emission Report
Page 2

Speciation Option: None Chemical Liquid: Kerosene

Vapor Pressure of total mixture = 0.041000
Minimum Vapor Pressure of total mixture = 0.041000
Maximum Vapor Pressure of total mixture = 0.041000
Vapor Molecular Weight of Mixture = 180.000000
Vapor pressure range = 0.041000

--- Storage Tank Standing Loss Information (AP-42) ----Roof Outage = 0.00 0.00 Vapor Space Outage = Vapor Space Volume = 0.00 Vapor Density = 0.0013 Breather Vent Range = 0.000000 Vapor Space Expansion Factor = 0.037217 Vented Vapor Saturation Factor = 1.000000 Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 18750
Liquid Volume (cubic feet) = 302
Turnovers = 8
Turnover Factor = 1.0000
Working Loss Product Factor = 1.00
Total Working Losses = 3.29

--- Storage Tank Total Losses (AP-42) ---- Total losses = 3.29 lb/year VOC

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Solvent is equal to that of Kerosene, the primary component of the solvent. TBP is a less volatile material, so this should provide a conservative estimate of vapor emissions.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of solvent lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor was determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests. No similar testing has been conducted using this solvent; this is the best data available.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions: 3.29 lb solvent $| 6 \times 10^{-06}$ lb U $| = 1.97E^{-08}$ lb U/year year | 1000 lb solvent |

Maximum Emissions: 1.97 E^{-08} lb U/year x 5 = 9.87 E^{-08} lb U/year

RENEWAL APPLICATION FOR PTO TO63

1,200

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

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ilton 4 County	1 <u>5030</u> Zip	<u>Cincinnati</u> City	OH 45 State	239-8705 Zip
		Telephone	513/ 738	-6502
		cation)	4953 Std. Ind. Cla	ass. Code
taminant source tached when app A, Process B, Fuel-Burning C, Incinerator D, Surface Coar Printing Oper E, Storage Tank H, Gasoline Dis Facility J, Loading Rack Gasoline Plan Terminal K, Surface Coar	In additi licable. Cl g Equipment ting or ration spensing k at Bulk nt or	on, a compliance heck as appropropropropropropropropropropropropro	ce time scheen in the formatte the formatte the formatter in the formatter in the formatter in the facility of the formatter in the facility of the formatter in the facility of the facility	dule form llowing: etal e Dust Sources endix No. re ng
of Source (same	e as used or	appendix): <u>Ta</u>	nk 17B	
fication for Sou	urce (same a	as used on appe	ndix): <u>02-09</u>	92
ive Code, here source(s) deso documents are su ents):	by apply f cribed here ubmitted as	for a Permit in. As required part of this a Authorized Si Kenneth L. Al	to Operate ired, the f pplication (multiple for the feature of t	the air following describe
	rilton County 513/ 738-65 Area N #1431110128- if this is a read attach any of taminant source tached when app A, Process B, Fuel-Burning C, Incinerator D, Surface Coaperinting Ope E, Storage Tank H, Gasoline Diffacility J, Loading Rack Gasoline Plan Terminal K, Surface Coaperine or Printing of Source (same fication for Source (same fication for Source)	County Zip 513/ 738-6502 Area Number #1431110128-T063 if this is a renewal applicated attach any of the follow taminant source. In additionable and tached when applicable. Consider a consist and the follow taminant source. In additionable and the follow taminant source. In additionable and the follow taminant source. In additionable and the follow taminant source and the follow taminant source and the follow taminant source and the follow taminate and the following taminate and the following taminate and the following taminate and the following taminate and the follow taminate and the following taminate and the followin	Project Post Office B Mailing Addre Acounty Zip City 513 / 738-6502 Area Number Telephone #1431110128-T063 if this is a renewal application) Ad attach any of the following appendices taminant source. In addition, a compliant tached when applicable. Check as appropriate taminant source. In addition, a compliant tached when applicable. Check as appropriate to the following appendices taminant source. In addition, a compliant tached when applicable. Check as appropriate to the following appendices taminant source. In addition, a compliance taminant source. In addition, a compliance taminant source. In addition, a compliance taminant source. Appendix to the following appendix to the	Project Person to Contact Post Office Box 398704 Mailing Address County Zip Cincinnati OH 45 County Zip City State 513/ 738-6502 513/ 738 Area Number Telephone #1431110128-T063 4953 if this is a renewal application) Std. Ind. Claim and attach any of the following appendices most appropriate the following appendix L, Solvent Mc Cleaning Appendix M, Fugitive Emission Extracted When applicable Check as appropriate the following appendix M, Fugitive Cleaning Appendix M, Rubber Time Manufacturing Appendix O, Dry Cleaning Appendix O, Dry Cleaning Compliance Time Schedules (Compliance Time Schedules) Manufacturing Appendix O, Dry Cleaning Appendix P, Landfills Other Appendix Compliance Time Schedules (Compliance Time Schedules) Manufacturing Appendix O, Dry Cleaning Compliance Time Schedules (Compliance Time Schedules) Manufacturing Appendix O, Dry Cleaning Compliance Time Schedules (Compliance Time Schedules) Manufacturing Appendix O, Dry Cleaning Compliance Time Schedules (Compliance Time Schedules) Manufacturing Appendix O, Dry Cleaning Compliance Time Schedules (Compliance Time Schedules) Manufacturing Appendix O, Dry Cleaning Compliance Time Schedules (Compliance Time Schedules) Manufacturing Appendix O, Dry Cleaning Compliance Time Schedules (Compliance Time Schedules) Manufacturing Appendix O, Dry Cleaning Compliance Time Schedules (Compliance Time Schedules) Manufacturing Comp

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 $\,$ EPA-3161 $\,$

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FOR OFFICIAL USE	ONLY
Premise No///	
Source No/	
Application No/	_

0)OE -	FEMP		
		cility		ne)
OEPA	NO 14	\$31110	128	TO
	FEMP	ID NO	. 02	2-09

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1.	Tank identification: Name or number 17B (FEMP 2-092) Date Installed 1952
2.	Tank capacity: 2,250 gallons (month/year)
	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify Tank dimensions: Diameter 8' Height 6' Length N/A Width N/A
4.	Tank dimensions: Diameter 8' Height 6' Length N/A Width N/A
5. 6.	Tank shell material: [] Steel [] Aluminum [X] Other, specifyStainless Steel Type of tank: [] External floating roof tank
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
3. 9.	Type of filling: [X] Splash [] Submerged [] Other, specify If this tank is located outdoors and above ground, provide the paint color of the tank. N/A Tank is not painted; Stainless Steel [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify Condition of paint: [] Good [] Poor
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through ℓ of this item. N/A
	a) Type of vapor control system Make or model Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A c) Specify the rate of emission or percent control (by weight) for any pollutants be controlled: (Attach calculations and test data to support response, unless previously submitted)

1 of 2

DOE - FEMB (Facility Name)

17B (FEMP 2-092)
(tank identification)

Ľ	ype o	f Vent Val				essure relief is d col, identify the	
				· · · · · · · · · · · · · · · · · · ·		· ·	
_	Oper	ational Da	ta (complete ((a) through (c	of this item	for all materials	stored or to be
	stor	ed. Attac	h additional s	sheets if nece	essary.)		
a) Ma [.]	terial <u>D</u>	irty Solvent (see note)	Trade Nam	ne <u>N/A</u>	
	Dei	nsity: <u>7</u>	<u>.3</u> 1bs/gal	or <i>F</i>	Producer _	N/A	
b) Tei (I	mperature f temperat	of stored mate ure is approxi	erial: Averag mately outdoo	e <u>AMB</u> °F and l r ambient tempe	Maximum <u>AMB</u> ° F rature, write "AMB	3 ⁿ .)
c			re of stored m , write "unkno		lete i, ii, iii	of this item. If	`vapor pressur
	i.)	Actual v	apor pressure:	: <u>unkno</u>		verage storage tem a at maximum stora	
	ii.)	Reid vap	or pressure:	Average	_ psi and minim	um-maximum	psi
	iii. is) If mater stored: _	rial stored is psi gage	a gas or liq e at '	uified gas, prov PF	vide the pressure	at which it
9	gasol	pe of liqu ine, fuel (on below.)	oil, kerosene,	cerial (If the crude oil, lu	material is an bricant or other	organic liquid <u>ot</u> petroleum liquid,	<u>her</u> than a , answer th
	Is i	t a photoc	hemically read	ctive materia	? [X] Yes	[] No	
е) Ty _l	pe of wast	e material (If	the material	is a waste, an	swer the question	below.)
			ous waste? [No		
f	Ify Ind	es, identi dicate the	fy type (EPA h	nazardous wasi month period)	te number) for item (g):	1983	
					0		
_	ام د د د	hy Dobo	rt K. Roulstor	n 1D		Date <u>Aug.</u>	20 1002

2 of 2

3500

Storage Tank Emission Report Tuesday, September 14 1993

```
--- Tank Characteristics ----
Identification
   Identification No.:
                           17B/2-092
                           Dayton
   City:
                            Ohio
   State:
                            DOE-FEMP
   Company:
Input Parameters
                            Vertical Fixed Roof
   Type of Tank:
Tank Dimensions
                                     6
   Shell Height (ft):
                                     8
   Diameter (ft):
                                     6
   Liquid Height (ft):
                                  2250
   Volume (gallons):
   Turnovers:
                                 18750
   Net Throughput (gal/yr):
Roof Characteristics
   Roof Type:
                             Cone
                             0.000
   Roof Height (ft):
   Slope (ft/ft):
                          0.00000
   Dome Radius (ft):
                             0.00
Paint Characteristics
   Shell Color/Shade:
                           Aluminum/Specular
   Shell Condition:
                            Good
   Roof Color/Shade:
                           Aluminum/Specular
   Roof Condition:
                            Good
Breather Vent Settings
   Vacuum Setting(psig):
                            0.00
   Pressure Setting(psig):
--- Storage Tank Contents Temperature Data ----
Daily Average Ambient Temperature (Degrees Farenheit) =
                                                                  51.90
Daily Minimum Ambient Temperature (Degrees Farenheit) =
                                                                  42.30
Daily Maximum Ambient Temperature (Degrees Farenheit) =
                                                                  61.50
Daily Ambient Temperature Range =
                                                                  19.20
Solar Insolation Factor =
                                                               1160.00
                                                                  0.39
Alpha (Shell) =
Alpha (Roof) =
                                                                  0.39
Liquid Bulk Temperature (Degrees Farenheit) =
                                                                  53.24
Average Liquid Surface Temperature (Degrees Farenheit) =
                                                                  56.22
Daily Maximum Liquid Surface Temperature (Degrees Farenheit) =
                                                                 62.84
Daily Minimum Liquid Surface Temperature (Degrees Farenheit) =
                                                                49.60
Daily Vapor Temperature Range =
                                                                  26.49
```

--- Storage Tank Vapor Pressure Information ----

Tuesday, September 14 1993 Storage Tank Emission Report Page 2

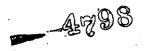
> Speciation Option: None Chemical Liquid: Kerosene

Vapor Pressure of total mixture =	0.041000
Minimum Vapor Pressure of total mixture =	0.041000
Maximum Vapor Pressure of total mixture =	0.041000
Vapor Molecular Weight of Mixture =	180.000000
Vapor pressure range =	0.000000

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0013
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.037217
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 18750
Liquid Volume (cubic feet) = 302
Turnovers = 8
Turnover Factor = 1.0000
Working Loss Product Factor = 1.00
Total Working Losses = 3.29

---- Storage Tank Total Losses (AP-42) ----Total losses = 3.29 lbs/year VOC



URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the solvent is equal to that of Kerosene, the primary component of the solvent. TBP is a less volatile material, so this should provide a conservative estimate of vapor emissions.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of solvent lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor was determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests. No similar testing has been conducted using this solvent; this is the best data available.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions: 3.29 lb solvent | 6×10^{-06} lb U | = 1.97E⁻⁰⁸ lb U/year year | 1000 lb solvent |

Maximum Emissions: $1.97E^{-08}$ lb U/year x 5 = 9.87 E^{-08} lb U/year

RENEWAL APPLICATION FOR PTO T064

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

D.O.EFernald Environmental Management Facility Name Project	Mr. Stephen M. Beckman Person to Contact
7400 Willey Road Facility Address	Post Office Box 398704 Mailing Address
Fernald Hamilton 45030 City County Zip	Cincinnati OH 45239-8705 City State Zip
513/ 738-6502 Telephone Area Number	513/ 738-6502 Telephone
#1431110128-T064	4953
(Application no., if this is a renewal appl	
 Complete and attach any of the foliother the air contaminant source. In addition to be attached when applicable. 	ion, a compliance time schedule form
Appendix A, ProcessAppendix B, Fuel-Burning EquipmentAppendix C, IncineratorAppendix D, Surface Coating orPrinting Operation xx_Appendix E, Storage TankAppendix H, Gasoline Dispensing	Appendix M, Fugitive Dust Emission Sources Specify Appendix No. Appendix N, Rubber Tire Manufacturing Appendix O, Dry Cleaning Facility Appendix P, Landfills Other Appendix Compliance Time Schedule
2. Description of Source (same as used of	
3. Your identification for Source (same	as used on appendix): 02-091
I, being the individual specified Administrative Code, hereby apply contaminant source(s) described her additional documents are submitted as all attachments): 1) Appendix E 2) Emission Calculations	for a Permit to Operate the air rein. As required, the following a part of this application (describe Authorized Signature Kenneth L. Alkema Vice President Regulatory Programs
	Title 9/17/93
018	Date

 $\theta \theta$

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 $\,$ EPA-3161 $\,$

FOR OFFICIAL USE ONLY Premise No.__/__/__/ Source No.__/__ Application No.___/__

	OE - FEMP	
OEPA	(Facility Name) NO 1431110128 TOO FEMP ID NO. 02-09	

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

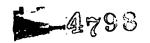
1.	Tank identification: Name or number 17A (FEMP 2-091) Date Installed 1952 (month/year)
	Tank capacity: 2,250 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify Tank dimensions: Diameter 8' Height 6' Length N/A Width N/A Tank shell material: [] Steel [] Aluminum [x] Other, specifyStainless Steel
4.	Tank dimensions: Diameter 8' Height 6' Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [x] Other, specifyStainless Steel
6.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
8. 9.	Type of filling: [X] Splash [] Submerged [] Other, specify If this tank is located outdoors and above ground, provide the paint color of the tank. N/A Tank is not painted; Stainless Steel [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify Condition of paint: [] Good [] Poor
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item. $\underline{\text{N/A}}$
	a) Type of vapor control system
	Manufacturer Make or model
	a) Type of vapor control system Make or model Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled: (Attach calculations and test data to support response, unless previously submitted)
	(According to the contractions and test data to support response, unitess previously submitted)

1 of 2

Type of Vent Valve	Pressure Vacuum Setting Setting	n If pressure relief is discharged to vapor control, identify the vapor control.
stored. Attach add	itional sheets if nece:	
a) Material <u>Dirty</u> Density: <u>7.3</u> b) Temperature of sto (If temperature i	Solvent (see note) _ lbs/gal or° AF ored material: Average s approximately outdoor	Trade Name N/A PI Producer N/A e AMB °F and Maximum AMB ° F c ambient temperature, write "AMB".)
c) Vapor pressure of pressure is not know	stored material (Compl n, write "unknown"):	ete i, ii, iii of this item. If vapor
i.) Actual vapor	pressure: <u>unknov</u> —	<u>vn psia at average storage temperature</u> <u>unknown psia at maximum storage temperatu</u>
ii.) Reid vapor pr	essure: Average	_ psi and minimum-maximum psi
iii.) If material s stored: psi	tored is a gas or liqu gage at °F	uified gas, provide the pressure at which it
d) Type of liquid org gasoline, fuel oil, k question below.)	ganic material (If the erosene, crude oil, lub	material is an organic liquid <u>other</u> than a pricant or other petroleum liquid, answer
Is it a photochemic	ally reactive material?	? [X] Yes [] No
e) Type of waste mate	erial (If the material	is a waste, answer the question below.)
Is it a hazardous w If yes, identify ty	aste? [] yes [] pe (EPA hazardous waste	No e number)
f) Indicate the year	(or 12-month period)	for item (g): 1983 gallons.

Storage Tank Emission Report Tuesday, September 14 1993

---- Tank Characteristics ----Identification 17A/2-091 Identification No.: City: Dayton Ohio State: DOE-FEMP Company: Input Parameters Vertical Fixed Roof Type of Tank: Tank Dimensions 6 Shell Height (ft): 8 Diameter (ft): Liquid Height (ft): 6 Volume (gallons): 2250 Turnovers: 8 Net Throughput (gal/yr): 18750 Roof Characteristics Roof Type: Cone Roof Height (ft): 0.000 Slope (ft/ft): 0.00000 Dome Radius (ft): 0.00 Paint Characteristics Aluminum/Specular Shell Color/Shade: Shell Condition: Good Aluminum/Specular Roof Color/Shade: Roof Condition: Good Breather Vent Settings Vacuum Setting(psig): 0.00 0.00 Pressure Setting(psig): ---- Storage Tank Contents Temperature Data ----Daily Average Ambient Temperature (Degrees Farenheit) = 51.90 Daily Minimum Ambient Temperature (Degrees Farenheit) = 42.30 Daily Maximum Ambient Temperature (Degrees Farenheit) = 61.50 19.20 Daily Ambient Temperature Range = Solar Insolation Factor = 1160.00 Alpha (Shell) = 0.39 Alpha (Roof) =0.39 Liquid Bulk Temperature (Degrees Farenheit) = 53.24 Average Liquid Surface Temperature (Degrees Farenheit) = 56.22 Daily Maximum Liquid Surface Temperature (Degrees Farenheit) = 62.84 Daily Minimum Liquid Surface Temperature (Degrees Farenheit) = 49.60 Daily Vapor Temperature Range = 26.49



--- Storage Tank Vapor Pressure Information ----

Tuesday, September 14 1993 Storage Tank Emission Report Page 2

Speciation Option: None Chemical Liquid: Kerosene

Vapor Pressure of total mixture =	0.041000
Minimum Vapor Pressure of total mixture =	0.041000
Maximum Vapor Pressure of total mixture =	0.041000
Vapor Molecular Weight of Mixture =	180.000000
Vapor pressure range =	0.000000

--- Storage Tank Standing Loss Information (AP-42) ----0.00 Roof Outage = 0.00 Vapor Space Outage = Vapor Space Volume = 0.00 0.0013 Vapor Density = Breather Vent Range = 0.000000 Vapor Space Expansion Factor = 0.037217 Vented Vapor Saturation Factor = 1.000000 Total Standing Losses = 0.00

--- Storage Tank Working Loss Information (AP-42) --Net Throughput (gal/year) = 18750
Liquid Volume (cubic feet) = 302
Turnovers = 8
Turnover Factor = 1.0000
Working Loss Product Factor = 1.00
Total Working Losses = 3.29

---- Storage Tank Total Losses (AP-42) ---Total losses = 3.29 lbs/year VOC

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the solvent is equal to that of Kerosene, the primary component of the solvent. TBP is a less volatile material, so this should provide a conservative estimate of vapor emissions.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of solvent lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor was determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests. No similar testing has been conducted using this solvent; this is the best data available.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions: 3.29 lb solvent | 6×10^{-06} lb U | = 1.97E⁻⁰⁸ lb U/year year | 1000 lb solvent|

Maximum Emissions: $1.97E^{-08}$ lb U/year x 5 = 9.87 E^{-08} lb U/year

RENEWAL APPLICATION FOR PTO TO65

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

D.O.EFernald	Environmenta	l Management	Mr. Stephen	M. Beckman	4798
Facility Name		<u>Project</u>	Person to Co		9
7400 Willey Roa			Post Office		
Facility Addres	SS	•	Mailing Addr	ress	
	lamilton	45030	Cincinnati		
City	County	Zip	City	State	Zip
	513/ 73			513/ 738	8-6502
Telephone	Area	Number	Telephone		
		0128-T065		4953	
(Application no	., if this is	a renewal ap	oplication)	Std. Ind. C	lass. Code
the air c	ontaminant so	urce. In add	llowing appendice dition, a compliar Check as approp	rce time sch	edule form
Append Append	lix A, Process lix B, Fuel-Bu lix C, Inciner lix D, Surface	irning Equipmorator Coating or	ent	L, Solvent M Cleaning x M, Fugitiv Emission	
xx_Append Append	Printing ix E, Storage ix H, Gasolin Facility	e Dispensing	Appendix	Specify App N, Rubber Ti Manufacturi	ire
	Terminal	Plant or	Appendix	O, Dry Clear Facility P, Landfills	-
Append	ix K, Surface Line or	Coating Printing Li	Other App ne <u>Complianc</u>	endix e Time Sched	lule
2. Descripti	on of Source	(same as used	d on appendix): <u>Ta</u>	ank 5B	
3. Your iden	tification fo	r Source (sar	me as used on app	endix): <u>02-0</u>	90
Administr contamina	ative Code, nt source(s) 1 documents a	hereby apply described h	d in Rule 3745-3 y for a Permit herein. As requ as part of this	to Operate uired, the	the air following
1) Append 2) Emissi	ix E on Calculatio	ns	Authorized S Kenneth L. A Vice Presider Title	1 kema	Programs
			9/17/93		

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate 0 ig 25 prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

FOR OFFICE ONLY
Premise No///
Source No/
Application No/

[00E -	FEM	1P'		
	(Fac	cil	ity	Nan	ne)
OEPA	NO 14				
	FFMD	חז	NO	02	-0

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

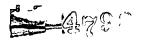
1	Tank identification: Name or number <u>5B (FEMP 2-090)</u> Date Installed <u>1952</u>
1.	EP2-081 EP2-080 Date Installed 1932
2.	Tank capacity: 2,600 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify
4.	[] Spherical [] Other, specify
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
5.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank
	[] Horizontal cylindrical tank
	[] Pressure tank
7.	[] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify Location of tank: [X] Outdoors [] Indoors [] Underground
3. €.	Type of filling: [X] Splash [] Submerged [] Other, specify If this tank is located outdoors and above ground, provide the paint color of the tank. N Stainless steel w/galvanized steel jacket [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify Condition of paint: [] Good [] Poor N/A
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through of this item. $\underline{\text{N/A}}$
	a) Type of vapor control system
	Manufacturer Make or model
	a) Type of vapor control system Make or model Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A c) Specify the rate of emission or percent control (by weight) for any pollutants be controlled:
	(Attach calculations and test data to support response, unless previously submitted)

DOE - FEMP

(Facility Name)
5B (FEMP 2-090)
(tank identification)

Type of Vent Valve	Pressure Vacuum Setting Setting	If pressure relief is vapor control, identify th	
Operational Data (c	omplete (a) through (g)	of this item for all materials	stored or to be
stored. Attach add	itional sheets if neces	sary.)	
a) Material Solven	t (see note)	Trade NameN/A	
b) Temperature of st (If temperature i	ored material: Average s approximately outdoor	Trade Name N/A I Producer N/A AMB °F and Maximum AMB °F ambient temperature, write "AM	B".)
c) Vapor pressure of pressure is not know		ete i, ii, iii of this item. I	f vapor
i.) Actual vapor		n psia at average storage te unknown psia at maximum stor	
ii.) Reid vapor pr	essure: Average	psi and minimum-maximum	psi
iii.) If material s stored: psi	stored is a gas or liqu gage at °F	ified gas, provide the pressure	e at which it is
d) Type of liquid or gasoline, fuel oil, k question below.)	ganic material (If the material) (If the material)	material is an organic liquid <u>o</u> ricant or other petroleum liquid	<u>ther</u> than a i, answer the
Is it a photochemic	ally reactive material?	[X] Yes [] No	
e) Type of waste mat	erial (If the material	is a waste, answer the question	below.)
	aste? [] yes []		
If yes, identify ty f) Indicate the year	pe (EPA hazardous waste (or 12-month period)	number) for item (g): 1983	
g) Annual throughput	of material: <u>325,00</u> 0	gallons.	
,			

2 of 2



Storage Tank Emission Report Tuesday, September 14 1993

26.49

--- Tank Characteristics ~---Identification Identification No.: 5B/2-090 Dayton City: Ohio State: FEMP-DOE Company: Input Parameters Vertical Fixed Roof Type of Tank: Tank Dimensions 7 Shell Height (ft): 8 Diameter (ft): 7 Liquid Height (ft): 2600 Volume (gallons): Turnovers: 125 Net Throughput (gal/yr): 325000 Roof Characteristics Cone Roof Type: Roof Height (ft): 0.000 Slope (ft/ft): 0.00000 Dome Radius (ft): 0.00 Paint Characteristics Shell Color/Shade: Aluminum/Specular Shell Condition: Good Aluminum/Specular Roof Color/Shade: Roof Condition: Good Breather Vent Settings Vacuum Setting(psig): 0.00 Pressure Setting(psig): 0.00 --- Storage Tank Contents Temperature Data ----Daily Average Ambient Temperature (Degrees Farenheit) = 51.90 Daily Minimum Ambient Temperature (Degrees Farenheit) = 42.30 Daily Maximum Ambient Temperature (Degrees Farenheit) = 61.50 19.20 Daily Ambient Temperature Range = 1160.00 Solar Insolation Factor = Alpha (Shell) = 0.39 0.39 Alpha (Roof) = Liquid Bulk Temperature (Degrees Farenheit) = 53.24 Average Liquid Surface Temperature (Degrees Farenheit) = 56.22 Daily Maximum Liquid Surface Temperature (Degrees Farenheit) = 62.84 Daily Minimum Liquid Surface Temperature (Degrees Farenheit) = 49.60

Section 1

Daily Vapor Temperature Range =

---- Storage Tank Vapor Pressure Information ----

Tuesday, September 14 1993 Storage Tank Emission Report Page 2

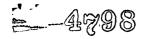
> Speciation Option: None Chemical Liquid: Kerosene

Vapor Pressure of total mixture =	0.041000
Minimum Vapor Pressure of total mixture =	0.041000
Maximum Vapor Pressure of total mixture =	0.041000
Vapor Molecular Weight of Mixture =	180.000000
Vapor pressure range =	0.000000

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0013
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.037217
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

```
---- Storage Tank Working Loss Information (AP-42) ----
Net Throughput (gal/year) = 325000
Liquid Volume (cubic feet) = 352
Turnovers = 123
Turnover Factor = 0.4097
Working Loss Product Factor = 1.00
Total Working Losses = 23.39
```

---- Storage Tank Total Losses (AP-42) ---- Total losses = 23.39 lbs/year VOC



URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

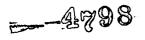
- (1) At typical tank pressures and temperatures, the vapor pressure of the Solvent is equal to that of Kerosene, the primary component of the solvent. TBP is a less volatile material, so this should provide a conservative estimate of vapor emissions.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of solvent lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor was determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests. No similar testing has been conducted using this solvent; this is the best data available.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions: $\frac{23.39 \text{ lb solvent } | 6 \times 10^{-06} \text{ lb U} |}{\text{year}} = 1.40E^{-07} \text{ lb U/year}$

Maximum Emissions: 1.40 E^{-08} 1b U/year x 5 = 7.00 E^{-07} 1b U/year

RENEWAL APPLICATION FOR PTO TO66



OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

D.O.1	EFernald En	vironmenta ¹	l Management_	Mr. Stephen	
Faci	lity Name		<u>Project</u>	Person to C	ontact
7400	Willey Road			Post Office	Box 398704
	lity Address		•	Mailing Add	ress
Ferna	ald Ham	ilton	45030	Cincinnati	OH 45239-8705
City		County	Zip	City	State Zip
		513/ 73	38-650 <i>2</i>		513/ 738-6502
Telep	hone	Area	Number	Telephone	320/
		#1431110	128-T066		4953
(Appl	ication no.,		a renewal app	olication)	Std. Ind. Class. Code
1.	the air consis to be at AppendixAppendixAppendixAppendixAppendix xx_Appendix	taminant so tached when A, Process B, Fuel-Bu C, Inciner D, Surface Printing E, Storage H, Gasolin	urce. In adding applicable. Irning Equipment ator Coating or Operation Tank Tank Tank	tion, a complia Check as appro Appendix nt Append	es most appropriate to nce time schedule form priate the following: L, Solvent Metal Cleaning ix M, Fugitive Dust Emission Sources Specify Appendix No. N, Rubber Tire
•	Appendix	Gasoline Terminal K, Surface Line or	Rack at Bulk Plant or Coating Printing Line	Appendix Other Appendix Compliance	ce Time Schedule
2.	Description	of Source	(same as used	on appendix): 1	ank 5A
3.	Your identi	fication fo	r Source (same	e as used on app	oendix): <u>02-089</u>
	Administrati contaminant	ive Code, source(s) documents a ents):	hereby apply described he re submitted a	for a Permit erein. As req	35-02(B) of the Ohio to Operate the air quired, the following application (describe
32					nt Regulatory Programs

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

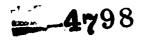
FOR OFFICIAL USE ONLY
Premise No/// Source No/ Application No/

	•
	OOE - FEMP
	(Facility Name)
OEPA	NO 1431110128 T066
	FEMO TO NO 02 000

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

	<u> </u>
	Tank identification: Name or number 5A (FEMP 2-089) Date Installed 1952 [FP2-080] (month/year)
2.	Tank capacity: 2,600 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify Tank dimensions: Diameter 8' Height 7' Length N/A Width N/A Tank shell material: [] Steel [] Aluminum [] Other, specify Stainless Steel
4	Tank dimensions: Diameter 8' Height 7' Length N/A Width N/A
ζ.	Tank shell material: [] Steel [] Aluminum [] Other, specify Stainless Steel
6.	[] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank
7.	[] Other, specify
8. 9.	Type of filling: [X] Splash [] Submerged [] Other, specify If this tank is located outdoors and above ground, provide the paint color of the tank. N/A: Stainless steel w/galvanized steel jacket [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify Condition of paint: [] Good [] Poor N/A
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item. $\underline{\text{N/A}}$
	a) Type of vapor control system Make or model Date installed (month and year)
	Manufacturer Make or model
	Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled:
	(Attach calculations and test data to support response, unless previously submitted)



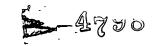
DOE - FEMP
(Facility Name)
5A (FEMP 2-089)
(tank identification)

Type of Vent Valve Set	Pressure Vacuum ting Setting				
12. Operational Data (comple stored. Attach addition	ete (a) through (g) nal sheets if neces:	of this item for a	all mate	erials stor	ed or to
a) Material <u>Solvent (se</u>	e note)	Trade Name	N/	/A .	
 a) Material <u>Solvent (see</u> Density: <u>7.3</u> lbs b) Temperature of stored (If temperature is app 	material: Average proximately outdoor	AMB of and Maxim ambient temperatur	num <u>AME</u> re, writ	3 ° F te "AMB".)	
c) Vapor pressure of stor is not known, write "u		te ì, ii, iii of t	his ite	em. If vap	or pressi
i.) Actual vapor press		psia at averaç ıknown psia at			
ii.) Reid vapor pressur	re: Average	psi and minimum-ma	aximum _		psi
iii.) If material stored is stored: psi	d is a gas or liqui gage at °F	fied gas, provide	the pre	ssure at wl	nich it
d) Type of liquid organic gasoline, fuel oil, kerose question below.)					
Is it a photochemically	reactive material?	[X] Yes []	No		
e) Type of waste material	(If the material i	s a waste, answer	the que	estion below	w.)
Is it a hazardous waste? If yes, identify type (E					
f) Indicate the year (or g) Annual throughput of m	or item (g):	1983 lons.			
3,		3			
Completed by <u>Robert K. Roul</u>	lston, Jr.		Date _	Aug. 30.	1993
•				٠	
NOTE: 75% kerosene, 25%	tributyl phosphate,	trace uranium cor	itent.		
,	2 of	2	1		

arbb

Storage Tank Emission Report Tuesday, September 14 1993

```
--- Tank Characteristics ----
Identification
   Identification No.:
                           5A/2-089
                           Dayton
  City:
                           Ohio
   State:
                           DOE-FEMP
  Company:
Input Parameters
   Type of Tank:
                           ·Vertical Fixed Roof
Tank Dimensions
   Shell Height (ft):
                                     7
                                     8
  Diameter (ft):
   Liquid Height (ft):
                                     7
   Volume (gallons):
                                  2600
                                   125
   Turnovers:
   Net Throughput (gal/yr):
                                325000
Roof Characteristics
   Roof Type:
                            Cone
   Roof Height (ft):
                            0.000
                          0.00000
   Slope (ft/ft):
   Dome Radius (ft):
                              0.00
Paint Characteristics
   Shell Color/Shade:
                           Aluminum/Specular
                           Good
   Shell Condition:
   Roof Color/Shade:
                           Aluminum/Specular
   Roof Condition:
                           Good
Breather Vent Settings
   Vacuum Setting(psig):
                            0.00
   Pressure Setting(psig):
                            0.00
--- Storage Tank Contents Temperature Data ----
Daily Average Ambient Temperature (Degrees Farenheit) =
                                                                  51.90
Daily Minimum Ambient Temperature (Degrees Farenheit) =
                                                                  42.30
Daily Maximum Ambient Temperature (Degrees Farenheit) =
                                                                  61.50
Daily Ambient Temperature Range =
                                                                  19.20
Solar Insolation Factor =
                                                                1160.00
Alpha (Shell) =
                                                                   0.39
Alpha (Roof) =
                                                                   0.39
                                                                  53.24
Liquid Bulk Temperature (Degrees Farenheit) =
Average Liquid Surface Temperature (Degrees Farenheit) =
                                                                  56.22
Daily Maximum Liquid Surface Temperature (Degrees Farenheit) =
                                                                  62.84
Daily Minimum Liquid Surface Temperature (Degrees Farenheit) =
                                                                  49.60
                                                                  26.49
Daily Vapor Temperature Range =
                                                               0035
```



--- Storage Tank Vapor Pressure Information ----

Tuesday, September 14 1993 Storage Tank Emission Report Page 2

Speciation Option: None Chemical Liquid: Kerosene

Vapor Pressure of total mixture =	0.041000
Minimum Vapor Pressure of total mixture =	0.041000
Maximum Vapor Pressure of total mixture =	0.041000
Vapor Molecular Weight of Mixture =	180.000000
Vapor pressure range =	0.000000

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0013
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.037217
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 325000
Liquid Volume (cubic feet) = 352
Turnovers = 123
Turnover Factor = 0.4097
Working Loss Product Factor = 1.00
Total Working Losses = 23.39

---- Storage Tank Total Losses (AP-42) ---- Total losses = 23.39 lbs/year VOC

URANIUM EMISSIONS

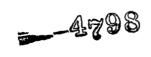
The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Solvent is equal to that of Kerosene, the primary component of the solvent. TBP is a less volatile material, so this should provide a conservative estimate of vapor emissions.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of solvent lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor was determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests. No similar testing has been conducted using this solvent; this is the best data available.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Maximum Emissions: 1.40 E^{-07} lb U/year x 5 = 7.00 E^{-07} lb U/year



RENEWAL APPLICATION FOR PTO TO68

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

4798

D.O.	EFernald En	vironmental	Management.	Mr. Stenhen	M. Beckman	- 7 0
	lity Name		<u>Project</u>	Person to (
	<u>Willey Road</u> lity Address			<u>Post Office</u> Mailing Add		
	ald Ham		45030		OH 452	39-8705
City		County	Zip	City	State	Zip
Teler	hone	513/ 738 Area	3-6502 Number	Telephone	513/ 738-	6502
•					4052	
(Appl	ication no.,	#1431110 if this is	a renewal appl	ication)	<u>4953</u> Std. Ind. Cla	ss. Code
1.	the air cont	taminant sou	rce. In addit	ion, a complia	es most appropo ance time sched priate the fol	ule form
	Appendix Appendix Appendix	C, Incinera D, Surface Printing	Coating or Operation	, , ,	L, Solvent Met Cleaning ix M, Fugitive Emission S	Dust
	xx_Appendix Appendix	E, Storage H, Gasoline Facility	Tank Dispensing	Appendix	Specify Apper N, Rubber Tire Manufacturing	· ·
	Appendix	J, Loading Gasoline	Rack at Bulk Plant or		O, Dry Cleanir Facility	
	Appendix	Terminal K, Surface Line or	Coating Printing Line	Other Ap	P, Landfills pendix ce Time Schedul	<u>. </u>
2.	Description	of Source (same as used or	n appendix): <u> </u>	Tank F1-512	
3.	Your identif	ication for	Source (same	as used on app	pendix): <u>02-094</u>	
÷	Administrati contaminant	ve Code, h source(s) ocuments ar	nereby apply described here	for a Permit ein. As rec	35-02(B) of the too operate to the following	he air llowing
	 Appendix Emission 		s for	Authorized S Kenneth L. A Vice Preside Title	Signature Alkema ent Regulatory P	rograms
				$\frac{9/17/9}{\text{Date}}$	<u> </u>	
				LIGIE .		

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161 0.039

4798
FOR OFFICIAL USE ONLY
Premise No///
Source No/
Application No/

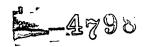
	0E	FEM	P	
·	(Fa	cili	ty N	lame)
OEPA	NO 14			
	FFMP	ו מז	NO.	02 - 0

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1	Tank identification: Name or numberF1-512 (FEMP 2-094) Date Installed1952
	(month/year)
2.	Tank capacity: 25,600 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify
4.	[] Spherical [] Other, specify
6.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify Location of tank: [X] Outdoors [] Indoors [] Underground
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
€.	Type of filling: [X] Splash [] Submerged [] Other, specify If this tank is located outdoors and above ground, provide the paint color of the tank. N/A Tank is not painted; stainless steel [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify Condition of paint: [] Good [] Poor
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through of this item. $\underline{\text{N/A}}$
	a) Type of vapor control system Make or model Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A c) Specify the rate of emission or percent control (by weight) for any pollutants be controlled: (Attach calculations and test data to support response, unless previously submitted)

11. Complete the table below for any pressure or vacuum relief vent valve. N/A
Pressure Vacuum If pressure relief is discharged to Type of Vent Valve Setting Setting vapor control, identify the vapor control.
Operational Data (complete (a) through (g) of this item for all materials stored or to stored. Attach additional sheets if necessary.)
a) Material Solvent (see note) Trade Name N/A Density: 7.3 lbs/gal or OAPI Producer N/A b) Temperature of stored material: Average AMB oF and Maximum AMB oF (If temperature is approximately outdoor ambient temperature, write "AMB".)
c) Vapor pressure of stored material (Complete i, ii, iii of this item. If vapor pressure is not known, write "unknown"):
i.) Actual vapor pressure: <u>Unknown</u> psia at average storage temperature <u>Unknown</u> psia at maximum storage temperatu
ii.) Reid vapor pressure: Average psi and minimum-maximum psi
iii.) If material stored is a gas or liquified gas, provide the pressure at which it stored: psi gage at °F
d) Type of liquid organic material (If the material is an organic liquid <u>other</u> than a gasoline, fuel oil, kerosene, crude oil, lubricant or other petroleum liquid, answer question below.)
Is it a photochemically reactive material? [X] Yes [] No
e) Type of waste material (If the material is a waste, answer the question below.)
Is it a hazardous waste? [] yes [] No If yes, identify type (EPA hazardous waste number) f) Indicate the year (or 12-month period) for item (g): 1983 g) Annual throughput of material: 250,000 gallons.
Completed by <u>Robert K. Roulston, Jr.</u> Date <u>Aug. 30, 1993</u>
NOTE: 75% Karasana 25% Tributyl Phosphata traca Uranium contant



Storage Tank Emission Report Tuesday, September 14 1993

--- Tank Characteristics ----Identification Identification No.: F1-512 Dayton City: Ohio State: DOE-FEMP Company: Input Parameters Type of Tank: Vertical Fixed Roof Tank Dimensions 60 Shell Height (ft): 9 Diameter (ft): 60 Liquid Height (ft): 25600 Volume (gallons): Turnovers: 10 250000 Net Throughput (gal/yr): Roof Characteristics Roof Type: Cone Roof Height (ft): 0.000 0.00000 Slope (ft/ft): Dome Radius (ft): 0.00 Paint Characteristics Aluminum/Specular Shell Color/Shade: Good Shell Condition: Roof Color/Shade: Aluminum/Specular Roof Condition: Good Breather Vent Settings Vacuum Setting(psig): 0.00 0.00 Pressure Setting(psig): ---- Storage Tank Contents Temperature Data ----Daily Average Ambient Temperature (Degrees Farenheit) = 51.90 Daily Minimum Ambient Temperature (Degrees Farenheit) = 42.30 Daily Maximum Ambient Temperature (Degrees Farenheit) = 61.50 Daily Ambient Temperature Range = 19.20 Solar Insolation Factor = 1160.00 0.39 Alpha (Shell) = 0.39 Alpha (Roof) =Liquid Bulk Temperature (Degrees Farenheit) = 53.24 Average Liquid Surface Temperature (Degrees Farenheit) = 56.22 Daily Maximum Liquid Surface Temperature (Degrees Farenheit) = 62.84 Daily Minimum Liquid Surface Temperature (Degrees Farenheit) = 49.60 Daily Vapor Temperature Range = 26.49

--- Storage Tank Vapor Pressure Information ----

Tuesday, September 14 1993 Storage Tank Emission Report Page 2

> Speciation Option: None Chemical Liquid: Kerosene

```
Vapor Pressure of total mixture = 0.041000
Minimum Vapor Pressure of total mixture = 0.041000
Maximum Vapor Pressure of total mixture = 0.041000
Vapor Molecular Weight of Mixture = 180.000000
Vapor pressure range = 0.000000
```

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0013
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.037217
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

```
---- Storage Tank Working Loss Information (AP-42) ----
Net Throughput (gal/year) = 250000
Liquid Volume (cubic feet) = 3817
Turnovers = 9
Turnover Factor = 1.0000
Working Loss Product Factor = 1.00
Total Working Losses = 43.93
```

---- Storage Tank Total Losses (AP-42) ---- Total losses = 43.93 lbs/year VOC

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the solvent is equal to that of Kerosene, the primary component of the solvent. TBP is a less volatile material, so this should provide a conservative estimate of vapor emissions.
- (2) Since uranium does not vaporize at storage conditions the only mechanism for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of solvent lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor was determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests. No similar testing has been conducted using this solvent; this is the best data available.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Maximum Emissions: $2.64E^{-07}$ lb U/year x 5 = $1.32E^{-06}$ lb U/year

RENEWAL APPLICATION FOR PTO T069

4798

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

<u>D.O.I</u> Faci	EFernald Env lity Name		anagement roject	Mr. Stephen Mr. Person to Co		
	Willey Road lity Address			Post Office B Mailing Addr		
<u>Ferna</u> City		<u>lton</u> County	45030 Zip	<u>Cincinnati</u> City	OH 45 State	239-8705 Zip
Telep	ohone	513/ 738-6 Area	5502 Number	Telephone	513/ 738	-6502
(App]	lication no.,	#1431110128 if this is a	3-T069 renewal appli	cation)	<u>4953</u> Std. Ind. C1	ass. Code
1.	the air conta	aminant sourc	of the follow e. In addition	on, a complian	ce time sche	dule form
2. 3.	Appendix Appendix Appendix Appendix Appendix Appendix Appendix Appendix Appendix Appendix	C, Incinerato D, Surface Co Printing Op E, Storage Ta H, Gasoline E Facility J, Loading Ra Gasoline Pl Terminal C, Surface Co Line or Pr Of Source (sa	pating or peration nk Dispensing ack at Bulk ant or	Appendix IAppendix IAppendix IAppendix IOther AppeCompliance appendix):_Ta	e Time Schedunk F3E-222	e Dust Sources endix No. re ng ing
	I, being the Administrative contaminant	e individual ve Code, her source(s) de ocuments are ots):	specified in reby apply fo escribed here submitted as	Rule 3745-3 or a Permit in. As requ	5-02(B) of to Operate ired, the fapplication (the Ohio the air following describe
46	A Section			9/17/9 Date	<u>'3</u>	· · ·

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

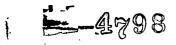
FUR	OFFICIAL	USE	UNLY
Premise No	//	_/	_
Source No	_/		
Application	No/		

[OOE - FEMP
	(Facility Name)
OEPA	NO 1431110128 T069
	FFMP ID NO. 02-097

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1.	Tank identification: Name or number <u>F3E-222 (FEMP 2-097)</u> Date Installed <u>1952</u>
	EP2-088 (month/year)
2.	Tank capacity: 30,000 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify Tank dimensions: Diameter 15'6" Height 21' Length N/A Width N/A Tank shell material: [] Steel [] Aluminum [] Other, specify Stainless Steel
4.	Tank dimensions: Diameter 15'6" Height 21' Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [] Other, specify Stainless Steel
6.	Type of tank: [] External floating roof tank
	[] Internal floating roof tank
	[X] Fixed roof tank
	[] Vertical cylindrical tank
	[] Horizontal cylindrical tank [] Pressure tank
	[] Pressure tank
	[] Other, specify
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
3. 9.	Type of filling: [X] Splash [] Submerged [] Other, specify If this tank is located outdoors and above ground, provide the paint color of the tank. N/A: Stainless steel w/galvanized steel jacket [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify Condition of paint: [] Good [] Poor N/A
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item. $\underline{\text{N/A}}$
	a) Type of vapor control system
	Manufacturer Make or model
	a) Type of vapor control system Make or model Date installed (month and year)
	\cdot
	b) Date tank was equipped with or vented to vapor control system (month & year) <u>N/A</u> c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled:
	(Attach calculations and test data to support response, unless previously submitted)



DOE - FEMP
(Facility Name)
F3E-222 (FEMP 2-097)
(tank identification)

]	Pressure Vacuum If pressure relief is discharged Type of Vent Valve Setting Setting vapor control, identify the vapor con
-	Operational Data (complete (a) through (g) of this item for all materials stored or stored. Attach additional sheets if necessary.)
ä	a) Material <u>Uranyl Nitrate</u> Trade Name <u>N/A</u>
	Material <u>Uranyl Nitrate</u> Trade Name <u>N/A</u> Density: <u>9.5</u> lbs/gal or <u>° API Producer N/A</u> Density: of stored material: Average <u>AMB</u> of and Maximum <u>AMB</u> of the stored material outdoor ambient temperature, write "AMB".)
C	c) Vapor pressure of stored material (Complete i, ii, iii of this item. If vapor press is not known, write "unknown"):
	i.) Actual vapor pressure:
	iii.) If material stored is a gas or liquified gas, provide the pressure at which it is stored: psi gage at °F
	d) Type of liquid organic material (If the material is an organic liquid <u>other</u> than a gasoline, fuel oil, kerosene, crude oil, lubricant or other petroleum liquid, answer question below.)
	Is it a photochemically reactive material? [] Yes [X] No
e	e) Type of waste material (If the material is a waste, answer the question below.)
f	Is it a hazardous waste? [] yes [] No If yes, identify type (EPA hazardous waste number) f) Indicate the year (or 12-month period) for item (g):
ç	g) Annual throughput of material: <u>3,750,000</u> gallons.

2 of 2

C. Fig.

Storage Tank Emission Report Thursday, September 16 1993

Tank Characteristics Identification Identification No.: City: State: Company:	F3E-222 Dayton Ohio DOE-FEMP
Input Parameters Type of Tank:	Vertical Fixed Roof
Tank Dimensions Shell Height (ft): Diameter (ft): Liquid Height (ft): Volume (gallons): Turnovers: Net Throughput (gal/yr)	21 15 21 27763 125 : 3750000
Roof Characteristics Roof Type: Roof Height (ft): Slope (ft/ft): Dome Radius (ft):	Cone 0.000 0.00000 0.00
Paint Characteristics Shell Color/Shade: Shell Condition: Roof Color/Shade: Roof Condition:	Aluminum/Specular Good Aluminum/Specular Good
Breather Vent Settings Vacuum Setting(psig): Pressure Setting(psig):	0.00
Daily Minimum Ambient Temper Daily Maximum Ambient Temper Daily Ambient Temperature F Solar Insolation Factor = Alpha (Shell) = Alpha (Roof) = Liquid Bulk Temperature (De Average Liquid Surface Temp Daily Maximum Liquid Surface	erature (Degrees Farenheit) = 51.90 erature (Degrees Farenheit) = 42.30 erature (Degrees Farenheit) = 61.50 erature (Degrees Farenheit) = 19.20 1160.00 0.39 egrees Farenheit) = 53.24 erature (Degrees Farenheit) = 56.22 erature (Degrees Farenheit) = 62.84 erature (Degrees Farenheit) = 49.60

ob00

0049



--- Storage Tank Vapor Pressure Information ----

Thursday, September 16 1993 Storage Tank Emission Report Page 2

Speciation Option: None

Chemical Liquid: Uranyl Nitrate

Vapor Pressure of total mixture =	0.227238
Minimum Vapor Pressure of total mixture =	0.175816
Maximum Vapor Pressure of total mixture =	0.287205
Vapor Molecular Weight of Mixture =	18.000000
Vapor pressure range =	0.111389

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0007
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.044914
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 3750000
Liquid Volume (cubic feet) = 3711
Turnovers = 135
Turnover Factor = 0.3888
Working Loss Product Factor = 1.00
Total Working Losses = 141.98

---- Storage Tank Total Losses (AP-42) ---- Total losses = 141.98 lbs/year Water Vapor

URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- At typical tank pressures and temperatures, the vapor pressure of the (1) Uranyl Nitrate solution is equal to that of water.
- Since uranium does not vaporize at storage conditions the only mechanism (2) for uranium loss from the tank is by entrainment in the aerosol or mist generated during liquid storage and transfer.
- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- The emission factor has been determined to be 6 x 10^{-06} qU/l of solution: (4) the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- Maximum emissions are five times the calculated annual emissions. (5)

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

 $141.98 \text{ lb water} | 6 \times 10^{-06} \text{ lb U} | = 8.52E^{-07} \text{ lb U/year}$ year | 1000 lb water |

Maxumum Emissions:

 $8.52E^{-07}$ lb U/year x 5 = $4.26E^{-06}$ lb U/year



RENEWAL APPLICATION FOR PTO TO70

4798

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

		vironmental M	lanagement_	Mr. Stephen	M. Beckman	
Facil	ity Name	<u> </u>	roject	Person to C	ontact	· ·
	<u>Willey Road</u> ity Address	·		Post Office Mailing Add		
Ferna	ld Ham	ilton	45030	Cincinnati	OH 452	239-8705
City	_	County	Zip	City	State	Zip
		513/ 738-			513/ 738-	-6502
Telep	hone	Area	Number	Telephone		
//1	· · · · · · · · · · · · · · · · · · ·	#143111012			4953	
(App I	ication no.,	ir this is a	renewal appli	cation)	Std. Ind. Cla	ass. Code
1.	the air cont	aminant sour	of the follow ce. In addition pplicable. Ch	on, a complia	nce time sched	dule form
	AppendixAppendix	C, Incinerat D, Surface C	oating or	 ··	L, Solvent Me Cleaning ix M, Fugitive Emission	. Dust
	xx_Appendix Appendix	Printing 0 E, Storage Ta H, Gasoline	ank	Appendix	Specify Appe N, Rubber Tir Manufacturin	·e
	Appendix	Facility J, Loading R Gasoline P	ack at Bulk lant or	•	O, Dry Cleani Facility	
	Appendix	Terminal K, Surface Co Line or P	oating rinting Line	Other App	P, Landfills pendix ce Time Schedu	le
2.	Description	of Source (sa	ame as used on	appendix): <u>T</u>	ank F3E-223	
3.	Your identif	ication for	Source (same a	s used on app	oendix): <u>02-09</u>	8
	Administrati contaminant	ve Code, he source(s) documents are	specified in reby apply fo escribed here submitted as	or a Permit in. As req	to Operate Juired, the f	the air
	 Appendix Emission 	E Calculations	for	Authorized S Kenneth L. A Vice Preside Title	Signature* Alkema nt Regulatory	Programs
				9/17/a_ Date	3	

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 EPA-3161

FOR OFFICIAL USE ONLY
Premise No///
Source No/
Application No/

[00E <u>-</u>	FEN	1P		
	(Fa	cil	ity	Nan	ie)
OEPA	NO 1	431	1101	28	TO
	FEMP	ID	NO.	02	-0

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

1	Tank identification: Name or number <u>F3E-223 (FEMP 2-098)</u> Date Installed <u>1952</u>
1.	EP2-089 (month/year)
2.	Tank capacity: 30,000 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify Tank dimensions: Diameter 15'6" Height 21' Length N/A Width N/A Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
4.	Tank dimensions: Diameter 15'6" Height 21' Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
6.	lype of tank: [] External floating roof tank
	[] Internal floating roof tank
	[X] Fixed roof tank
	[] Vertical cylindrical tank
	[] Horizontal cylindrical tank
	[] Pressure tank
	[] Other, specify
7.	[] Horizontal cylindrical tank [] Pressure tank [] Other, specify Location of tank: [X] Outdoors [] Indoors [] Underground
8. 9.	Type of filling: [X] Splash [] Submerged [] Other, specify If this tank is located outdoors and above ground, provide the paint color of the tank. Note that the standard steel is steel w/galvanized steel is light gray [] White [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify
10.	If this tank is equipped with or vented to a vapor control system, complete (a) through of this item. $\underline{\text{N/A}}$
	a) Type of vapor control system Manufacturer Make or model
	Manufacturer Make or model
	Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) <u>N/A</u> c) Specify the rate of emission or percent control (by weight) for any pollutants be controlled:
	(Attach calculations and test data to support response, unless previously submitted)

DOE - FEMP
(Facility Name)
F3E-223 (FEMP 2-098)
(tank identification)

11. Complete the table below for any pressure or	vacuum relief vent valve. N/A
Pressure Vacuum Type of Vent Valve Setting Setting	If pressure relief is discharged to a vapor control, identify the vapor control.
12. Operational Data (complete (a) through (g) o stored. Attach additional sheets if necessa	f this item for all materials stored or to be ry.)
a) Material <u>Uranyl Nitrate</u> Density: <u>9.5</u> lbs/gal or <u>° API</u> b) Temperature of stored material: Average <u>/</u> (If temperature is approximately outdoor an	AMB of and Maximum AMB of
c) Vapor pressure of stored material (Complete pressure is not known, write "unknown"):	e i, ii, iii of this item. If vapor
i.) Actual vapor pressure: <u>0.46</u> (Aqueous Solution - <u>0.</u> essentially water) ii.) Reid vapor pressure: Average p	46 psia at maximum storage temperature
iii.) If material stored is a gas or liquifi it is stored: psi gage at °F	ed gas, provide the pressure at which
 d) Type of liquid organic material (If the material gasoline, fuel oil, kerosene, crude oil, lubric question below.) 	terial is an organic liquid <u>other</u> than a cant or other petroleum liquid, answer the
Is it a photochemically reactive material?	[] Yes [X] No
e) Type of waste material (If the material is	a waste, answer the question below.)
Is it a hazardous waste? [] yes [] No If yes, identify type (EPA hazardous waste not) Indicate the year (or 12-month period) for g) Annual throughput of material: 3,750,000	item (g): <u>1983</u>
Completed by <u>Robert K. Roulston</u> , Jr.	DateAug. 30, 1993

Storage Tank Emission Report Thursday, September 16 1993

```
--- Tank Characteristics ----
Identification
                            F3E-223
   Identification No.:
                            Dayton
   City:
                            Ohio
   State:
                            DOE-FEMP
   Company:
Input Parameters
                            Vertical Fixed Roof
   Type of Tank:
Tank Dimensions
                                    21
   Shell Height (ft):
   Diameter (ft):
                                    16
   Liquid Height (ft):
                                    21
   Volume (gallons):
                                 30000
                                   125
   Turnovers:
                               3750000
   Net Throughput (gal/yr):
Roof Characteristics
                             Cone
   Roof Type:
                             0.000
   Roof Height (ft):
                           0.00000
   Slope (ft/ft):
                              0.00
   Dome Radius (ft):
Paint Characteristics
                            Aluminum/Specular
   Shell Color/Shade:
   Shell Condition:
                            Good
   Roof Color/Shade:
                            Aluminum/Specular
   Roof Condition:
                            Good
Breather Vent Settings
   Vacuum Setting(psig):
                             0.00
   Pressure Setting(psig):
                             0.00
--- Storage Tank Contents Temperature Data ----
                                                                  51.90
Daily Average Ambient Temperature (Degrees Farenheit) =
                                                                  42.30
Daily Minimum Ambient Temperature (Degrees Farenheit) =
                                                                  61.50
Daily Maximum Ambient Temperature (Degrees Farenheit) =
Daily Ambient Temperature Range =
                                                                  19.20
                                                                1160.00
Solar Insolation Factor =
                                                                  0.39
Alpha (Shell) =
Alpha (Roof) =
                                                                   0.39
Liquid Bulk Temperature (Degrees Farenheit) =
                                                                  53.24
Average Liquid Surface Temperature (Degrees Farenheit) =
                                                                  56.22
Daily Maximum Liquid Surface Temperature (Degrees Farenheit) =
                                                                 62.84
                                                                 49.60
Daily Minimum Liquid Surface Temperature (Degrees Farenheit) =
                                                                  26.49
Daily Vapor Temperature Range =
```

--- Storage Tank Vapor Pressure Information ----

Thursday, September 16 1993 Storage Tank Emission Report Page 2

Speciation Option: None

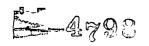
Chemical Liquid: Uranyl Nitrate

Vapor Pressure of total mixture =	0.227238
Minimum Vapor Pressure of total mixture =	0.175816
Maximum Vapor Pressure of total mixture =	0.287205
Vapor Molecular Weight of Mixture =	18.000000
Vapor pressure range =	0.111389

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0007
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.044914
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

---- Storage Tank Working Loss Information (AP-42) ---Net Throughput (gal/year) = 3750000
Liquid Volume (cubic feet) = 4222
Turnovers = 119
Turnover Factor = 0.4194
Working Loss Product Factor = 1.00
Total Working Losses = 153.16

---- Storage Tank Total Losses (AP-42) ---- Total losses = 153.16 lbs/year water vapor



URANIUM EMISSIONS

The calculations for uranium emissions are based on known data where possible and where data for parameters is unknown or incomplete, conservative values producing a "worst case" condition for emissions are used.

The conditions used to determine uranium emissions from the tank are as follows:

- (1) At typical tank pressures and temperatures, the vapor pressure of the Uranyl Nitrate solution is equal to that of water.
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- (3) Uranium emissions are determined by multiplying the amount of water lost from the tank by entrainment in the aerosol or mist generated during liquid storage and transfer by an emission factor determined from laboratory tests conducted on Lab sample D-37, Lab #2-9846.
- (4) The emission factor has been determined to be 6 x 10^{-06} gU/l of solution; the maximum concentration of uranium entrained in the vapor from a boiling solution of 9% uranyl nitrate as determined by the laboratory tests.
- (5) Maximum emissions are five times the calculated annual emissions.

These calculations are based on conservative estimates, the actual emissions are expected to be less than those indicated.

Annual Emissions:

 $\frac{153.16 \text{ lb water} | 6 \times 10^{-06} \text{ lb U} |}{\text{year}} = 9.19E^{-07} \text{ lb U/year}$

Maxumum Emissions:

 $9.19E^{-07}$ lb U/year x 5 = $4.60E^{-06}$ lb U/year

RENEWAL APPLICATION FOR PTO TO71

4798

OHIO ENVIRONMENTAL PROTECTION AGENCY APPLICATION FOR A PERMIT TO OPERATE AN AIR CONTAMINANT SOURCE

D.O.E	Fernald	<u>Environmental</u>	Management	Mr. Stephen	
Facil	ity Name		Project	Person to C	ontact
7400	Willey_Road	d		Post Office	Box 398704
Facil	ity Addres	s	·	Mailing Add	ress
<u>Ferna</u>	ld Ha	amilton	45030	<u>Cincinnati</u>	OH 45239-8705
City		County	Zip	City	State Zip
7.3	L	513/ 738		Talantana	513/ 738-6502
Telep	none	Area	Number	Telephone	
<u>//nn7</u>	ication no	#14311101	128-T071 a renewal appli	cation	4953 Std. Ind. Class. Code
(App i	ication no.	, it this is	a renewal appil	Cation	Std. Ind. Class. Code
1.	the air co	ntaminant sou	rce. In additi	on, a complia	es most appropriate to nce time schedule form oriate the following:
	Appendi	ix A, Process ix B, Fuel-Bur ix C, Incinera ix D, Surface	rning Equipment tor Coating or		L, Solvent Metal Cleaning ix M, Fugitive Dust Emission Sources
		Printing x E, Storage	Operation		Specify Appendix No.
	Appendi	x H, Gasoline	Dispensing	Appendix	N, Rubber Tire
	Appendi	Facility x J, Loading	Rack at Bulk	Appendix	Manufacturing O, Dry Cleaning
		Gasoline			Facility
	Appendi	Terminal x K, Surface	Coating	Appendix Other App	P, Landfills pendix
	<u> </u>		Printing Line	Complianc	e Time Schedule
2.	Description	n of Source (same as used on	appendix):_T	ank F3E-224
3.	Your ident	ification for	Source (same a	ıs used on app	endix): <u>02-099</u>
	Administra contaminan	tive Code, h t source(s) documents ar	nereby apply f described here	or a Permit in. As req	35-02(B) of the Ohio to Operate the air uired, the following application (describe
	 Appendi Emissio 	x E n Calculation		Authorized S Kenneth L. A Vice Presiden	ignature lkema nt Regulatory Programs
				Title	
				<u>9/17/9</u> Date	<u>'3</u>

*Pursuant to OAC Rule 3745-35-02(B) (Permit to Operate).

Operation of an air contaminant source without an effective permit to operate is prohibited to 3704.05 Ohio Revised Code. Page 1 $\,$ EPA-3161 $\,$

FOR	OFFICIAL	USE	ONLY
Premise No.	//	_/	
Source No.	/		
Application	No/		_

DOE - FEMP (Facility Name) OEPA NO 1431110128 T071 FEMP ID NO. 02-099

APPENDIX E-2

INORGANIC MATERIAL STORAGE TANK OR STORAGE TANK WITH CAPACITY LESS THAN 40,000 GALLONS

l .	Tank identification: Name or number $F3E-224$ (FEMP 2-099) Date Installed 1952 EP2-090 (month/year)
2.	Tank capacity: 30,000 gallons
3.	Tank shape: [X] Cylindrical [] Rectangular [] Spherical [] Other, specify Tank dimensions: Diameter 15'6" Height 21' Length N/A Width N/A Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
١.	Tank dimensions: Diameter 15'6" Height 21' Length N/A Width N/A
5.	Tank shell material: [] Steel [] Aluminum [X] Other, specify Stainless Steel
ō.	Type of tank: [] External floating roof tank [] Internal floating roof tank [X] Fixed roof tank [] Vertical cylindrical tank [] Horizontal cylindrical tank [] Pressure tank [] Other, specify Location of tank: [X] Outdoors [] Indoors [] Underground
7.	Location of tank: [X] Outdoors [] Indoors [] Underground
3. 9.	Type of filling: [X] Splash [] Submerged [] Other, specify If this tank is located outdoors and above ground, provide the paint color of the tank. N/A: Stainless steel w/qalvanized steel jacket [] Aluminum (specular) [] Light gray [] White [] Aluminum (diffuse) [] Medium gray [] Other, specify Condition of paint: [] Good [] Poor N/A
0.	If this tank is equipped with or vented to a vapor control system, complete (a) through (c) of this item. $\underline{\text{N/A}}$
	a) Type of vapor control system
	a) Type of vapor control system Make or model
	Date installed (month and year)
	b) Date tank was equipped with or vented to vapor control system (month & year) N/A c) Specify the rate of emission or percent control (by weight) for any pollutants being controlled: (Attach calculations and test data to support response, unless previously submitted)

11. Complete the table below for any pressure or vacuum relief vent valve. N/A
Pressure Vacuum If pressure relief is discharged Type of Vent Valve Setting Setting vapor control, identify the vapor cont
12. Operational Data (complete (a) through (g) of this item for all materials stored or stored. Attach additional sheets if necessary.)
a) Material Uranyl Nitrate Trade Name N/A
a) Material <u>Uranyl Nitrate</u> Trade Name <u>N/A</u> Density: <u>~9.0</u> lbs/gal or <u> </u>
 b) Temperature of stored material: Average <u>AMB</u> °F and Maximum <u>AMB</u> °F (If temperature is approximately outdoor ambient temperature, write "AMB".)
c) Vapor pressure of stored material (Complete i, ii, iii of this item. If vapor pres is not known, write "unknown"):
i.) Actual vapor pressure: 0.46 psia at average storage temperature (Aqueous Solution 0.46 psia at maximum storage temperate essentially water) ii.) Reid vapor pressure: Average psi and minimum-maximum psi
iii.) If material stored is a gas or liquified gas, provide the pressure at which it is stored: psi gage at °F
 d) Type of liquid organic material (If the material is an organic liquid <u>other</u> than a gasoline, fuel oil, kerosene, crude oil, lubricant or other petroleum liquid, answer question below.)
Is it a photochemically reactive material? [] Yes [X] No
e) Type of waste material (If the material is a waste, answer the question below.)
Is it a hazardous waste? [] yes [] No If yes, identify type (EPA hazardous waste number) f) Indicate the year (or 12-month period) for item (a):
f) Indicate the year (or 12-month period) for item (g): 1983 g) Annual throughput of material: 3,750,000 gallons.
Completed by Robert K. Roulston, Jr. Date Aug. 30, 1993

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Storage Tank Emission Report Thursday, September 16 1993

```
--- Tank Characteristics ----
 Identification
   Identification No.:
                            F3E-224
   City:
                            Dayton
   State:
                            Ohio
   Company:
                            DOE-FEMP
Input Parameters
   Type of Tank:
                            Vertical Fixed Roof
Tank Dimensions
   Shell Height (ft):
                                    21
   Diameter (ft):
                                    16
   Liquid Height (ft):
                                    21
   Volume (gallons):
                                 30000
   Turnovers:
                                   125
   Net Throughput (gal/yr): 3750000
Roof Characteristics
   Roof Type:
                             Cone
                             0.000
   Roof Height (ft):
   Slope (ft/ft):
                          0.00000
   Dome Radius (ft):
                              0.00
Paint Characteristics
   Shell Color/Shade:
                           Aluminum/Specular
   Shell Condition:
                           Good
   Roof Color/Shade:
                           Aluminum/Specular
   Roof Condition:
                           Good
Breather Vent Settings
   Vacuum Setting(psig):
                            0.00
   Pressure Setting(psig): 0.00
---- Storage Tank Contents Temperature Data ----
Daily Average Ambient Temperature (Degrees Farenheit) =
                                                                 51.90
Daily Minimum Ambient Temperature (Degrees Farenheit) =
                                                                 42.30
Daily Maximum Ambient Temperature (Degrees Farenheit) =
                                                                 61.50
Daily Ambient Temperature Range =
                                                                 19.20
Solar Insolation Factor =
                                                               1160.00
Alpha (Shell) =
                                                                  0.39
Alpha (Roof) =
                                                                  0.39
Liquid Bulk Temperature (Degrees Farenheit) =
                                                                 53.24
Average Liquid Surface Temperature (Degrees Farenheit) =
                                                                 56.22
Daily Maximum Liquid Surface Temperature (Degrees Farenheit) =
                                                                 62.84
Daily Minimum Liquid Surface Temperature (Degrees Farenheit) =
                                                                 49.60
                                                                 26.49
Daily Vapor Temperature Range =
```

--- Storage Tank Vapor Pressure Information ----

Thursday, September 16 1993 Storage Tank Emission Report Page 2

Speciation Option: None

Chemical Liquid: Uranyl Nitrate

Vapor Pressure of total mixture =	0.227238
Minimum Vapor Pressure of total mixture =	0.175816
Maximum Vapor Pressure of total mixture =	0.287205
Vapor Molecular Weight of Mixture =	18.000000
Vapor pressure range =	0.111389

---- Storage Tank Standing Loss Information (AP-42) ---Roof Outage = 0.00
Vapor Space Outage = 0.00
Vapor Space Volume = 0.00
Vapor Density = 0.0007
Breather Vent Range = 0.000000
Vapor Space Expansion Factor = 0.044914
Vented Vapor Saturation Factor = 1.000000
Total Standing Losses = 0.00

```
---- Storage Tank Working Loss Information (AP-42) ----
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Turnover Factor = 0.4194
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